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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/743,520	01/11/2001	Martin John Oates	36-1395	4044

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EXAMINER

PALADINI, ALBERT WILLIAM

ART UNIT	PAPER NUMBER
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2125

DATE MAILED: 11/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/743,520

Applicant(s)

OATES, MARTIN JOHN

Examiner

Albert W Paladini

Art Unit

2125

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 11 January 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-41 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 January 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 4.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "obtaining means," "first determining means," "generating means," and "second determining means" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Specification***

2. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: The "obtaining means," "first determining means," "generating means," and "second determining means" are not clearly identified in the specification.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

4. Claims 1-41 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

***Claim 1***

Lines 10-13 recite "generating means for repeatedly generating a new string of values by selecting a sequence of values of random length, starting at a random position in said string of values." The term "length" implies a dimension, and appears inconsistent with the definition of "string of values" implied by lines 4-6 of the claim

recitation. Each element of the initial string of values obtained in lines 4-6 is a parameter of the model to be optimized. For example, if an electrical circuit were being modeled, the first element of the string might be  $R_1$  for a resistor; the second element of the string might be  $L_1$  for an inductor, and so on. There is no length involved in this process. If a string is considered a vector, and one starts at the third position of the vector and selects parametric elements three through 8, then some subset of the parameters of the model is selected, so that the entire circuit or configuration will not be modeled.

### **Claim 21**

Lines 10-13 recite "repeatedly generating a new string of values by selecting a sequence of values of random length, starting at a random position in said string of values." The term "length" implies a dimension, and appears inconsistent with the definition of "string of values" implied by lines 4-6 of the claim recitation. Each element of the initial string of values obtained in lines 4-6 is a parameter of the model to be optimized. For example, if an electrical circuit were being modeled, the first element of the string might be  $R_1$  for a resistor; the second element of the string might be  $L_1$  for an inductor, and so on. There is no length involved in this process. If a string is considered a vector, and one starts at the third position of the vector and selects parametric elements three through 8, then some subset of the parameters of the model is selected, so that the entire circuit or configuration will not be modeled.

Appropriate correction and clarification is required.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Systems Engineering Tools by Harold Chestnut.

This rejection is made to the extent that the claims are understood.

In figure 8.4-6 on page 473, Chestnut depicts a method for determining optimum parameters of a model of a physical system. The methodology is described in section 8.4 from page 467 to page 476, and each step of the process is performed by a digital computer, which inherently contains all of the means to perform the calculations and corresponding analysis. The "initiate block" in the figure is where the initial set of values is given. As Chestnut states on page 469 "All of these methods require also that a starting point be selected that satisfies all the constraints which may be imposed on the problem by minimizing or maximizing a function  $z(x)$ . This means that an engineer must be in a position to assign initial values to all the variables  $x$  in the problem." Using the gradient, the variables are changed to generate a new string of values. The algorithm tests for both improvement in the response, and minimum steps until an

optimum solution are obtained in the block "Terminate." The criteria are described on page 468, where Chestnut states "Several methods are briefly described here. All of them require that the cost function to be minimized be reduced after each step of the procedure.  $z(x)_{p+1} < z(x)_p$ ." Chestnut does not discuss "selecting a sequence of values of random length" as recited in claims 1 and 21.

Since each element of the initial string of values is a parameter of the physical system to be modeled, selecting a sequence of ransom length does not make sense as explained in paragraphs 3 and 4, so that this limitation would not have been understood by one of ordinary skill in the art. Therefore it has not been addressed.

### ***Relevant Prior Art***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Karmarkar (4914563) discloses a method and apparatus for optimizing the operational state of a system utilizing scaling techniques, whereby the first step entails selecting or inputting the initial system parameters; the second step entails a power series calculation to determine a second set of parameters for the new system state, and then the stopping criteria is utilized to test for optimum convergence.

Tegethoff (5539652) discloses a circuit simulation method, which is capable of performing "what-if" analysis for every parameter of the simulation wherein a particular parameter or set of parameters is changed and the entire simulation, re-run. In this

manner, the contributions of individual parameters to the overall product manufacturability can be isolated and evaluated. Based on top Pareto output information, the user can modify an entry in one of the library file menus and re-run the simulation, generating new results for comparison. These what-if simulations can be stored for further evaluation. Typical what-if simulations will include changes in the test process flow, sensitivity analysis on defect rates, sensitivity analysis on test coverages, and comparison of assembly processes.

Vlach (5548539) discloses an analysis mechanism for system performance simulation, which incorporates a decision algorithm for design optimization, which operates in the feed-back mode. Optimization is similar to centering and tolerancing in that the system parameters are iteratively modified in an attempt to achieve desired system performance. Optimization is different, however, in that the "cost function" to be optimized is general purpose and the simulations need not be statistical in nature. Optimization may be used to modify the "nominal" system design parameters to maximize nominal functionality and to minimize cost, stress, noise, etc. The decision algorithms determine how the system performance is to be modified based on the results of previous simulations.

Whiffen (6151566) discloses a groundwater remediation simulation technique where a model using piecewise continuous control of the contaminated groundwater site is created. Modeling the groundwater site involves the use of a computer with a central processing unit having a memory or recordable media. Design objectives and constraints are then specified and input into the model. For example, the design objectives may be the cost as a function of the design variables. The goal is then to minimize the cost over all possible designs. Design constraints may require that the site be remediated within ten years. Another design constraint may require no contamination concentration exceeding a given value be allowed outside a given compliance boundary during the remediation. In general, design constraints may be physical, biological, regulatory, and/or economic in nature. Virtually any type of constraint, associated with the particular contaminated site, that will have an impact on the remediation plan, can be specified using the present invention.



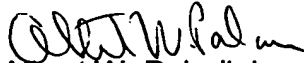
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8. Any inquiry concerning this communication or earlier communication from the examiner should be direct to Albert W. Paladini whose telephone number is (572) 272-3748. The examiner can normally be reached from 7:30 to 3:30 PM on Monday, Tuesday, Thursday, and Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Leo P. Picard, can be reached on (572) 272-3749. The official fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

November 5, 2004

  
Albert W. Paladini  
Primary Examiner  
Art Unit 2125